



Silica-Fused Zirconia Micro Beads for Retention between Veneering Resin Composite and Zirconia

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Clinical Image

When prostheses are fabricated with Yttria-Stabilized Zirconia (Y-TZP), strong bonding between the resin and Y-TZP framework is needed. Therefore, we report a method to improve mechanical retention by modifying a technique to coat Y-TZP with silica-based ceramics [1]. The surface of Y-TZP beads (150 μm to 212 μm diameter; TZ-B180, Tosoh; (Figure 1)) were coated with a silica-based ceramic spray (Crystall/Glaze Spray, Ivoclar Vivadent, Schaan, Liechtenstein). As the substrate material, disk-shaped Y-TZP specimens (Tosoh, Tokyo, Japan) were air-abraded with alumina (Hi Aluminas, Shofu Inc. Kyoto, Japan). A silica-based ceramic agent (Initial IQ Lustre Paste, GC, Tokyo, Japan) was primed on the Y-TZP specimen, then the silica coated Y-TZP beads were dropped on it, and it was fired at 940°C under vacuum. Figure 2 illustrates the specimen fused with Y-TZP micro beads. Such retention methods can be used in conjunction with chemical bonding systems to veneer a zirconia framework with resin composite materials.

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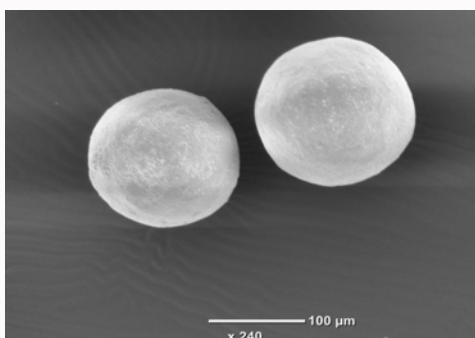


Figure 1: The Y-TZP micro beads used. Its surface was sputter-coated with gold (Ion Coater IB-3, Eiko Engineering, Hitachinaka, Japan), and then observed using a scanning electron microscope (JCM-6000Plus, JEOL, Tokyo, Japan) at a magnification of 240X.

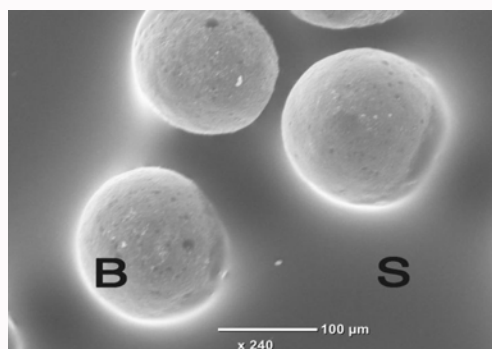


Figure 2: The Y-TZP micro beads (B) bonded to Y-TZP plate using silica-based intermediate ceramic agents (S). The bottom of the beads is fused to the silica-based ceramic layer (original magnification 240X).

References

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